

① 11

②  $4\sqrt{5}$

③  $5\sqrt{6}$

④  $72\sqrt{5}$

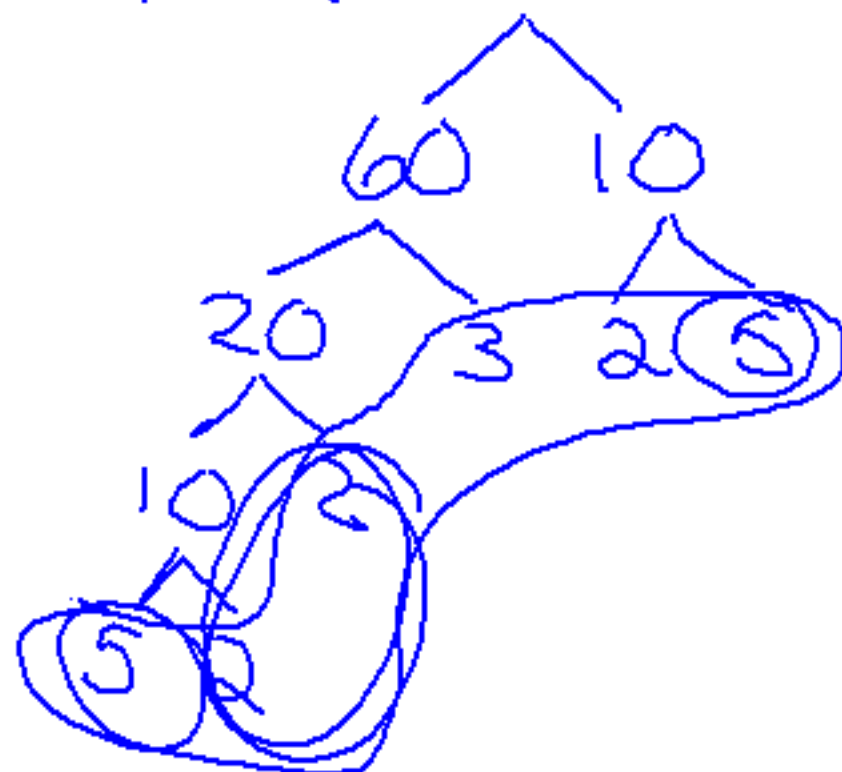
⑤ 56

⑥  $140\sqrt{6}$

⑦ 24

$$7\sqrt{60} \cdot 2\sqrt{10}$$

$$14\sqrt{600}$$



$$14 \cdot 2 \cdot 5\sqrt{6}$$



$$\textcircled{8} \frac{2\sqrt{3}}{9}$$

$$\textcircled{9} \frac{2\sqrt{210}}{7}$$

$$\textcircled{10} \frac{\sqrt{210}}{5}$$

$$\textcircled{11} \frac{\sqrt{3}}{2}$$

$$\textcircled{12} \sqrt{10} + \sqrt{3}$$

$$\sqrt{\frac{84}{10}} = \frac{\sqrt{84}}{\sqrt{10}} = \frac{2\sqrt{21}}{\sqrt{10}} \cdot \frac{\sqrt{10}}{\sqrt{10}}$$

$$\frac{\cancel{2}\sqrt{210}}{\cancel{10}} = \frac{\sqrt{210}}{5}$$

$$\begin{array}{c} \sqrt{84} \\ \swarrow \searrow \\ 2 \quad 42 \\ \quad \swarrow \searrow \\ \quad 2 \quad 21 \\ \quad \quad \swarrow \searrow \\ \quad \quad 3 \quad 7 \end{array} \quad 2\sqrt{21}$$

$$\textcircled{13} \quad 9\sqrt{11}$$

$$\textcircled{14} \quad 8\sqrt{6}$$

$$\textcircled{15} \quad 2\sqrt{21}$$

$$\textcircled{16} \quad \frac{5(10-\sqrt{5})}{(10+\sqrt{5})(10-\sqrt{5})} = \frac{50-5\sqrt{5}}{95} = \boxed{\frac{10-\sqrt{5}}{19}}$$

$100 - \cancel{10\sqrt{5}} - \cancel{10\sqrt{5}} - 5$

$$\textcircled{17} \frac{(7-\sqrt{3})(2+\sqrt{11})}{(2-\sqrt{11})(2+\sqrt{11})}$$

$$\frac{14 + 7\sqrt{11} - 2\sqrt{3} - \sqrt{33}}{-7}$$

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$$\textcircled{18} \frac{8}{(4-\sqrt{2})} \cdot \frac{4+\sqrt{2}}{(4+\sqrt{2})} = \frac{32+8\sqrt{2}}{14} = \boxed{\frac{16+4\sqrt{2}}{7}}$$

$$\textcircled{19} \frac{(2+\sqrt{8})}{(6+\sqrt{6})} \cdot \frac{(6-\sqrt{6})}{(6-\sqrt{6})}$$

$$6\sqrt{8}$$



$$\frac{12 - 2\sqrt{6} + 12\sqrt{2} - 4\sqrt{3}}{30}$$

$$30$$

$$\frac{6 - \sqrt{6} + 6\sqrt{2} - 2\sqrt{3}}{15}$$

$$15$$

HW:

$$i = \sqrt{-1}$$

$$\left(\sqrt{-1}\right)^2$$

(38)  $11 + i$

(44)  $21i$

(46)  $12 + 23i$

(48)  $4 + 24i$

(50)  $39 + 13i$

(54)  $-91 + 60i$

$$(3 + 10i)^2 \quad i^2 = -1$$

$$(3 + 10i)(3 + 10i)$$

$$9 + 30i + 30i + 100i^2$$

$$9 + 60i + 100i^2$$

$$9 + 60i + 100(-1)$$

$$9 + 60i - 100$$

$$-91 + 60i$$

## Review: $i$

20  $i = \sqrt{-1}$

21  $i^2 = -1$

22  $i^3 = -i$

23  $i^4 = 1$

24  $8i$

25  $7 - i$

26  $-3 - 12i$

27  $14 + 11i$

28  $36 + 2i$

29  $32 - 60i$

30  $164i$

31  $16 + 12i$

$(-4 - 3i)(2 + 6i^2)$

$-8 - 24i^2 - 6i - 18i^3$

$-8 + 24 - 6i + 18i$

$16 + 12i$



## Division

$$\textcircled{1} \frac{(5+3i) \cdot (1+2i)}{(1-2i)(1+2i)}$$

$$= \frac{5+10i+3i+6i^2}{1+\cancel{2i}-\cancel{2i}-4i^2} = \frac{5+13i-6}{1+4} = \boxed{\frac{-1+13i}{5}}$$

$$\textcircled{2} \frac{(4-2i)(3+3i)}{(3-3i)(3+3i)}$$

$$= \frac{12+12i-6i-6i^2}{9+9i-9i-9i^2} = \frac{12+6i+6}{9+9} = \frac{18+6i}{18}$$

$$\boxed{\frac{3+i}{3}}$$

$$\textcircled{3} \frac{5}{(2+i)} \cdot \frac{(2-i)}{(2-i)} = \frac{10-5i}{4-\cancel{2i}+\cancel{2i}-i^2} = \frac{10-5i}{5} = \frac{2-i}{1}$$

2-i

$$\textcircled{4} \frac{(3+i)}{(3-i)} \cdot \frac{(3+i)}{(3+i)} = \frac{9+3i+3i+i^2}{9+3i-3i-i^2} = \frac{9+6i-1}{9+1}$$

$$= \frac{8+6i}{10} = \frac{4+3i}{5}$$

4+3i  
5

p. 277

# 40, 45, 51, 52, 56, 60, 62